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air immediately rises, enveloping the glass cylinder, and keeping it dry and in the best state for working. When the heater gets too cool to produce the required effect, it is replaced by another, so that two heaters are necessary—one to be in the fire while the other is in use. The board is raised on short feet, sufficiently to prevent the heater-trough from touching the table.

For the purpose of ascertaining the efficacy of this apparatus, the inventor has employed the electrical machine, so fitted up, in the open air, in a cellar, and in other places of diminished temperature, with full success, using only the precaution of wiping off the dust with a silk handkerchief previous to putting in the heater. When this subject was under examination by the Society, a single instance was reported to them of a lamp being placed below the cylinder, with a plate of metal between the two to diffuse the heat; but, as the combustion either of oil or of alcohol is attended with the production of aqueous vapour, Mr. Brown's method, which is free from this objection, seems to deserve the preference.

No. V.

MANUFACTURE OF VARNISHES.

In the last volume of the Society's Transactions is inserted a very valuable practical treatise on the Manufacture of Varnishes, by Mr. J. W. Neil, of Battersea. The following directions for boiling oil have since been communicated by Mr. Neil, and are here inserted as an appendix to his former paper:—

Linseed-Oil.

Put twenty-five gallons of linseed-oil into an iron or copper pot that will hold at least thirty gallons; put a fire under, and gradually increase the heat, so that the oil may only simmer, for two hours; during that time the greatest part of its moisture evaporates; if any scum arises on the surface, scum it off, and put that aside for inferior purposes.

Then increase the fire gradually, and sprinkle in, by a little at a time, 3 lbs. of W. B. scale litharge, 3 lbs. good red lead, and 2 lbs. of Turkey umber, all well dried, and free from moisture; if any moist driers are added they will cause the oil to tumefy, and, at the same time, darken the oil, and cause it to look opaque and thick, ropy and clammy, and hinder the oil from drying and hardening in proper time; besides, it lies on the working painting like a piece of bladder-skin, and is very apt to rise in blisters. As soon as all the driers are added to the oil, keep quietly stirring the driers from the bottom of the pot otherwise they will burn, which will cause the oil to blacken and thicken before it is boiled enough. Let the fire be so regulated that the oil shall only boil slowly for three hours from the time all the driers were added; if it then ceases to throw up any scum, and emits little or no smoke, it is necessary to have recourse to a few quill-tops or feathers. Dip a quill-top in the oil every two minutes, for when the oil is boiled enough the quill-top will crackle or curl up quite burnt; if so, draw out the fire immediately, and let the oil remain in the pot at least from ten to twenty-four hours, or longer, if convenient, for the driers settle much sooner when the oil is left to cool in the pot than when it is immediately taken out.

Boiled oil ought always to be kept in casks set on end, or in leaded cisterns screened from the sun; lead cisterns assist its clarification and its drying quality. Keep drying or boiled oil from the air and sun, as it is apt to become viscid or glutinous, or what is termed fat. Good oil, boiled according to these directions, will be pale, thin, limpid, and brilliant; will work and extend freely under the brush or pencil, and will dry glossy and hard without leaving any tack. Some boilers of oil add rosin to their boiled oil, in order to enable them to increase its quantity, and so to undersell the fair dealer; but all oil so adulterated is very pernicious to the colours, as it long retains a soft clamminess, works tough and pasty under the brush or pencil; and lastly, even when dry, its surface blackens, and soon decays, leaving the work it was intended to preserve to be alternately scorched by the sun, and rotted by the weather.

Poppy-Oil

Is extracted from the seeds of the white poppy, and is very sweet and unctuous, and requires a preliminary preparation to render it more drying. As it is less coloured than other oils, it is preferred for delicate kinds of painting, from a notion that delicate colours are not so apt to change, if ground in this oil, in preference to others. I here subjoin two processes for giving a drying quality to oil of poppies.

Into four pints of pure soft water put two ounces of foreign white copperas; warm the water in a clean copper pan, or glazed earthen jar, until the copperas is dissolved; pour the mixture into a clean glass or stone bottle, large enough to contain three gallons; then add to the solution of copperas one gallon and a half of poppy-oil; cork and agitate the bottle regularly and smartly for at least two hours; then pour out the contents into a wide earthenware dish; leave it at rest for eight days, when the oil will be clear and brilliant on the surface, and may be taken off with a spoon or flat skimmer, and put up in a glass bottle, and exposed to the light, which in a few weeks renders the oil exceedingly limpid and colourless.

Second Process.

Into four pints of pure soft water put two ounces of white copperas; warm the water as before; pour it into a glass bottle; then add one gallon and a half of poppy-oil, one ounce of calcined magnesia, and one ounce of powdered manganese; cork and agitate the bottle smartly for at least two hours; have in readiness a new flannel bag large enough to hold the contents of the bottle, which is to be emptied into the bag, suspended over a broad earthenware dish, so as to receive the oil and water as it drops from the bag; when the fluid has passed through the bag the absorbents are to be thrown out, the bag washed and kept until another occasion; the oil and water, after being left at rest for a week, may be separated as before directed, and the oil put up to the light; and the longer it is kept before using the paler and more drying it becomes.

Nut-Oil, or Oil of Walnuts,

Is extracted by expression; and that which is extracted without heat is certainly the most pale, pure, and nutritive seasoning, and retains an exquisite taste of the fruit. That designed for the arts is of inferior quality, and is plentifully imported to us from France; the heat it undergoes in its torrefaction previous to its expression disposes it to dry more quickly than that expressed by the cold process; but, at the same time, the heat, though it frees it from its unctuous quality, gives it more colour. When it has been extracted by the cold process, it may be prepared in the same way as directed for the poppy-oil.

CORRIGENDA IN FIRST PART OF VOL. L.

Page 11, 5 *lines from bottom*, *for* height, and place the connecting bar *g*, *read* height and place, the connecting bar *g*.
13, *line* 2, *for* ; then unclamp *read* , first unclamping.
14, 5 and 8, *for b read l.*
— 16, *for* lie *read* lies the bar.
26, 8, *after* grs. *add* of morphia.
33, 16, *dele* working.
39, 3, *for* latter *read* former.
— 10, *after* to *add* air and.
53, 8, 11, 27, 31, *for* bar or bars *read* arm or arms.
— 14, *for* 2 *read* 1.
55, 21, *dele* subsequently.
57, 14, *dele* and.
58, 3 *from bottom, for c c,* which is a front, *read* which is a front view, *c c.*
59, 5 *from bottom, dele* thrown back and, *and insert the same in the next following line*, *after* compartment.
63, 5, *for* covered *read* high-pressure.
69, 5 *from bottom*, *for* right angles *read* the angle.
84, 9, *after* horns *insert e.*
86, 12 *from bottom*, *dele* (as in figure 15).
90, 1 *and* 2, *omit* alternate.
— 6, *omit* half the planks retain their original thickness, and.
— 9, *omit* half.
91, 6 *from bottom, after* separate *add* in perspective.
—, *last line*, *after* Fig. 1 *add* the two other arms of this knee are horizontal, and at right angles to each other, one of them being parallel to the side of the ship, and the other perpendicular to it.
99, *last line*, *for* 1 *read* 2.
100, *line* 1, *for* 2 *read* 1.
108, 6 *from bottom, read the first part of this sentence as follows:*
A straight bar projects from the hinder part of the plate *f*, and to this is attached a crank *g* in such a position that the end of its lower arm shall move vertically whenever the bar attached to *f* is moved horizontally.
109, 4, *for* ring, *twice repeated*, *read* swivel.
110, 23, *for the sentence* the weight *to* end of *g*, *substitute* the weight *l* on the spindle *i* balances the spiral *m*, the weight *o* on the crank balances the copper plate and horizontal bar, and another weight at the right hand end of the bar *g* (not shewn in the engraving), balances the weight of the wire.
144, 4, *after* entire *add* machine.
155, 11 *from bottom*, *for* shave *read* have.